

S06-198  
Amendment dated 10/19/2009

10/599,084

02940350aa  
Reply to office action mailed 05/19/2009

The following is a complete listing of all claims in the application, with an indication of the status of each:

**Listing of claims:**

- 1        1. (currently amended) A method for reducing motion artifacts and patient  
2        dose in radiological imaging using four dimensional computed tomography  
3        (4D CT), comprising the steps of:  
4                identifying a pattern in an average cycle artifacts in 4D CT images of  
5        an anatomy being imaged, said pattern image artifacts being responsive to  
6        irregularities in a reproducible periodic motion of said anatomy;  
7                establishing spatial and temporal tolerances around said pattern, said  
8        tolerances being an envelope around said pattern balancing an acquisition  
9        time against a quality of an acquired 4D CT image;  
10               measuring said a periodic motion of said anatomy so as to detect when  
11        said periodic motion is outside said tolerances irregularities;  
12               controlling a 4D CT scan of said anatomy so as to pause the scan  
13        during periods having said detected out of tolerance condition irregularities.
  
- 1        2. (original) A method as in claim 1, wherein said anatomy is a lung and said  
2        measuring step uses a respiratory signal.
  
- 1        3. (canceled).
  
- 1        4. (currently amended) The method of claim ~~3~~ 2, wherein said controlling  
2        step further includes the steps of:  
3                acquiring a respiratory signal during said 4D CT scan;

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4                   applying said envelope to said respiratory signal; and  
5                   adapting said 4D CT scan to said respiratory signal by excluding from  
6                   said 4D CT scan data acquired when said respiratory signal is not within said  
7                   envelope.

1           5. (original) The method of claim 4, wherein data acquired during irregular  
2           respiratory cycles is excluded by pausing said 4D CT scan data acquisition  
3           when said respiratory signal is not within said envelope.

1           6. (original) A system for reducing motion artifacts and patient dose in  
2           radiological imaging using four dimensional computed tomography (4D CT),  
3           comprising:  
4                   means for identifying a pattern in an average cycle ~~artifacts in 4D CT~~  
5                   ~~images~~ of an anatomy being imaged, said pattern ~~image artifacts~~ being  
6                   responsive to ~~irregularities in a~~ reproducible periodic motion of said anatomy;  
7                   means for establishing spatial and temporal tolerances around said  
8                   pattern, said tolerances being an envelope around said pattern balancing an  
9                   acquisition time against a quality of an acquired 4D CT image;  
10                  means for measuring ~~said a~~ periodic motion of said anatomy so as to  
11                  detect when said periodic motion is outside said tolerances ~~irregularities~~;  
12                  means for controlling a 4D CT scan of said anatomy so as to pause the  
13                  scan during periods having said detected out of tolerance condition  
14                  ~~irregularities~~.

1           7. (original) A system as in claim 6, wherein said anatomy is a lung and said  
2           measuring means uses a respiratory signal.

1           8. (canceled).

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1        9. (currently amended) The system of claim ~~8~~ 7, wherein said controlling  
2        step further comprises:  
3                means for acquiring a respiratory signal during said 4D CT scan;  
4                means for applying said envelope to said respiratory signal; and  
5                means for adapting said 4D CT scan to said respiratory signal by  
6        excluding from said 4D CT scan data acquired when said respiratory signal is  
7        not within said envelope.

1        10. (currently amended) The system of claim 9, wherein said adapting means  
2        provides that data acquired during irregular respiratory cycles is excluded by  
3        pausing said 4D CT scan data acquisition when said respiratory signal is not  
4        within said envelope.

1        11. (original) A method for reducing motion artifacts in radiological imaging  
2        using four dimensional computed tomography (4D CT), comprising the steps  
3        of:  
4                identifying ~~a pattern in an average cycle artifacts in 4D CT images of~~  
5        an anatomy being imaged, said pattern image artifacts being responsive to  
6        ~~irregularities in a reproducible~~ periodic motion of said anatomy;  
7                establishing spatial and temporal tolerances around said pattern, said  
8        tolerances being an envelope around said pattern balancing an acquisition  
9        time against a quality of an acquired 4D CT image;  
10                measuring ~~said a~~ periodic motion of said anatomy so as to detect when  
11        said periodic motion is outside said tolerances ~~irregularities~~;  
12                controlling post-processing of a 4D CT scan of said anatomy so as to  
13        omit data acquired during periods having said detected out of tolerance  
14        condition ~~irregularities~~.

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1        12. (original) A method as in claim 11, wherein said anatomy is a lung and  
2        said measuring step uses a respiratory signal.

1        13. (canceled).

1        14. (currently amended) The method of claim ~~13~~ 12, wherein said controlling  
2        step further includes the steps of:  
3                acquiring a respiratory signal during said 4D CT scan;  
4                applying said envelope to said respiratory signal; and  
5                adapting said 4D CT scan to said respiratory signal by excluding  
6        during said post-processing of said 4D CT scan data acquired when said  
7        respiratory signal is not within said envelope.

1        15. (original) The method of claim 14, wherein data acquired during  
2        irregular respiratory cycles is excluded by omitting data acquired during said  
3        4D CT scan when said respiratory signal was not within said envelope.